

MAR 27 1987

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MEMORANDUM FOR: Chairman Zech
FROM: Victor Stello, Jr.
Executive Director for Operations
SUBJECT: EMERGENCY RESPONSE DATA SYSTEM IMPLEMENTATION

Your approval is requested to enter into the subject contract which exceeds \$750,000.00. My delegation of authority requires your approval of such contracts.

Background

The NRC, as a regulator of commercial nuclear power plants, will be involved in monitoring any emergency at a licensed reactor that has the potential for affecting the public health and safety. In such an instance, the NRC's role is to support the licensee and state or local governments who have primary responsibility for responding to emergencies at nuclear power facilities. This support includes monitoring the licensee to assure that appropriate protective action recommendations are made offsite, confirming the licensee's recommendation to offsite authorities, informing other Federal agencies and the media of the status of the incident, and providing technical analysis and logistic support to the licensee.

During an emergency, the NRC requires accurate, timely data on four types of parameters: (1) core and coolant system conditions, (2) conditions inside the containment building, (3) radioactivity release rates, and (4) data from the plant's meteorological tower.

Currently, the licensee transmits data to the NRC by standard voice telephone communications. Two primary phone links are used: the Emergency Notification System (ENS), a dedicated leased line used primarily for reactor data, and the Health Physics Network (HPN) used primarily for radiological and meteorological data.

Experience with a voice-only emergency communications link, has demonstrated that excessive amounts of time are needed for the routine transmission of data and verification or correction of data that appear questionable. Error rates have been excessive; initiations have been slow; and frequency of updates have been unreliable. Incorrect data may cause the NRC to respond to offsite officials with inaccurate or outdated advice that results in the implementation of inappropriate protective actions.

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PDR FOIA
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Contact: Edward L. Jordan, IE

FOIA-87-737

OFFICE	XC4046								
SURNAME	Patricia Smith, ADH								
DATE	XC4046								

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The Commission has determined that improved data acquisition capabilities are essential to enable NRC to adequately fulfill its response role during emergencies. The Emergency Response Data System (ERDS) is considered to be the best system concept for NRC use in its response role during emergency situations at reactor sites.

Discussion

The Division of Contracts proposes to competitively acquire the hardware, software, and technical assistance necessary to implement the ERDS to support the NRC incident response function. We anticipate implementation of the ERDS to take five years at an estimated cost of \$5,370,000.

The ERDS design concept, approved by the Commission in SECY-84-401, is an electronic transmission link to be initiated by licensees in an emergency. The link is to provide automatic updating of a limited set of data necessary for the NRC to independently assess and project the condition of the plant and to determine whether appropriate recommendations are being made to state and local officials regarding measures which should be taken to protect the public during an emergency. The ERDS does not include any significant hardware or software modifications to licensee equipment. Licensees will use existing electronic data systems to transmit information.

The contractor will be responsible for procuring, installing, and testing the hardware and developing, installing, and testing the software based on the design produced by the ERDS Requirements Analysis. This includes equipment other than the telecommunications network for transmission of the data stream from the licensee to the NRC Operations Center, and the Headquarters hardware and software for the receipt, reformatting, display, and retransmission of the data. The contractor will also be responsible for maintenance of the system during the contract period and for the training of system users.

The estimated funding for this project is summarized below and, for FY 1987, is provided for within OIE's current budget estimate. The OIE FY 1988 through FY 1992 budget requests will include funding for this project.

Fiscal Year	FY 1987	FY 1988	FY 1989	FY 1990	FY 1991	FY 1992
Estimate	1,000,000	1,030,000	1,030,000	1,030,000	1,030,000	1,000,000

This project has been coordinated with the reactor program offices to ensure that this work does not unnecessarily duplicate either NRC work. This project has been reviewed and approved by the Senior Contract Review Board.

OFFICE						
SURNAME						
DATE						

The Source Evaluation Panel and the Contracting Officer will consider the question of organizational conflict of interest in accordance with NRC policy stated in Title 41, Code of Federal Regulations subpart 20-1.54, and will ensure that no organizational conflict of interest exists in the resulting contract award.

Should members of your staff have questions regarding this procurement action, they may contact Edward L. Jordan in IS or Patricia A. Smith in ADP. To comply with various provisions of the Federal Acquisition Regulation which are directed toward safeguarding the acquisition process, it is requested that all budget information concerning this project be regarded as confidential until after the contract is awarded.

Recommendation

I recommend that you provide approval to enter into a contract for this acquisition.

Original signed by
Victor Stello

Victor Stello, Jr.
Executive Director for Operations

Enclosure:
Proposed Statement of Work

cc: Commissioner Roberts
Commissioner Asselstine
Commissioner Donahel
Commissioner Carr
OSC
SECY

EDO
JRae
3/18/87

EDO
VStello
3/18/87

OFFICE	ADM:DC:CNB	OIE	OIE	ADM:DC:DD	ADM:DC:D	ADM:DD	ADM:D
SURNAME	RThompson:s	EJordan	JTaylor	MJMatia	EAltman	PSand	Pherry
E	3/18/87	3/18/87	3/18/87	3/18/87	3/18/87	3/18/87	3/18/87

Section B - Supplies or Services and Prices/Costs

B.1 Brief Description of Work

"Emergency Response Data System Implementation"

The objective of this project is to implement an Emergency Response Data System (ERDS). The ERDS design concept is an electronic transmission link from the existing electronic data systems used by licensed nuclear power plants at their facilities. The link is to provide automatic updating of a limited set of data necessary for the NRC to independently assess and project the condition of the plant, and to assess whether appropriate recommendations are being made to state and local officials with respect to measures which should be taken to protect the public during an emergency at a licensed nuclear power plant. The contractor will be responsible for procuring, installing, and testing the hardware; and developing, installing, and testing the software necessary for the ERDS based on the design produced by the ERDS Requirements Analysis. This includes the equipment other than the telecommunications network for transmission of the data stream from the licensee to the NRC Operations Center, and the Headquarters hardware and software for the receipt, reformatting, display, and retransmission of the data. This does not include any significant new hardware or software modifications to licensee equipment.

March 11, 1987

Section C - Description/Specifications/Work Statement

C.1 Statement of Work

C.1.1 Background

This section describes the history and purpose of the Emergency Response Data System (ERDS) and its function during an emergency at a licensed nuclear power facility. The program for developing and implementing ERDS is described and the contractor's role in that program is delineated.

C.1.1.1 Purpose of the ERDS

The NRC, by virtue of its position as a regulator of commercial nuclear power plants, will be involved in monitoring any emergency at a licensed reactor that has the potential of affecting the public health and safety. While the licensee is always responsible for operating the plant, the NRC has a role in assessing the overall adequacy of licensee actions and recommendations for mitigating the accident consequences and protecting the public. The NRC may also develop independent analyses to assure that the public is fully protected, because experience indicates that Governors and other authorities may call upon the licensee and/or the NRC for advice. This NRC role in protecting the health and safety of the public requires access to certain data from plants during emergencies that is as timely and

accurate, though not nearly as extensive, as that available to the licensee. The current method of manual data collection and telephoned reports is marginal to unacceptable for the NRC to perform its role during emergencies. This process has frequently proven unreliable and inaccurate during events and exercises. Errors are frequently introduced during acquisition, transcription and verbal transmission. The process has been burdensome to technical personnel at the plant site and at NRC. The Commission has determined that improved data acquisition capabilities are essential to enable the Commission to adequately fulfill its response role during emergencies.

C.1.1.2 History of ERDS

As a result of the March 28, 1979, accident at Three Mile Island Unit 2, and at numerous less serious events and exercises since that time, the NRC recognized the need to substantially improve the NRC's capability to acquire data on plant conditions during emergencies. The staff's response to this need immediately following the accident at Three Mile Island included a proposal for a Nuclear Data Link (NDL). A conceptual design for a NDL was produced under contract with Sandia National Laboratories, and, in April 1981, the Commission directed the staff to proceed with an NDL prototype program. However, beginning in June 1981, a series of Congressional actions and requests caused the NRC to reassess releasing a Request for Proposal to conduct a prototype study. In the FY 1983 Pay Raise Supplement and the FY 1984 Appropriations Bills, the Congress took actions that effectively rejected several NRC requests to the Congress to allow the NDL to

proceed. However, the NRC's FY 1984-85 Authorization required that the NDL concept be included as part of any analysis of alternative means for upgrading NRC data acquisition.

The FY 1984-85 Authorization Act required the analysis of four issues before an NDL or similar system could be implemented: (1) the appropriate role of the Commission during an accident, (2) the information needed by the Commission to support that role, (3) the alternative means of acquiring that data, and (4) any changes in Commission authority necessary to enhance Commission response to nuclear emergencies. The Act also required a cost-benefit analysis of the alternatives considered for acquiring the data. The staff addressed these issues in SECY-84-481 dated December 26, 1984, and following Commission approval, provided a response to Congress. The response described the NRC role in an emergency, as defined by the Commission, as one of monitoring the licensee to assure that appropriate recommendations are made with respect to offsite protective actions. The Commission, at this point, abandoned the NDL concept as being inappropriate to this agency role. The response stated that the Commission had selected the Emergency Response Data System (ERDS) concept as the most appropriate means to support its emergency response role.

C.1.1.3 Program Plan

C.1.1.3.1 - Phase 1. The first phase of the ERDS program was completed with the selection of the ERDS concept as the appropriate data acquisition system. Options considered included various means of acquiring

the data: manually, automatically from existing systems, or automatically with new systems. Options considered for transmitting the data to the Operations Center included electronically formatted data, image facsimile, and voice communications between specially trained and qualified personnel. The criteria used to compare these options included accuracy, reliability, timeliness, completeness, cost, personnel requirements, and backfitting requirements.

The ERDS design concept embodies automatic acquisition of a predetermined list of plant parameters, with electronic transmission of the data over standard telephone or other NRC provided communication line to a computer at the NRC Operations Center. The ERDS approach emphasizes utilization of licensees existing electronic data systems and minimizes the need for licensees to backfit their systems. Any parameter on the NRC's list which is not on a particular licensee's computer system will be transmitted by voice rather than requiring the licensee to add the parameter to its system. In most cases data will be accepted in the licensee's format to minimize the licensee's software development requirements. Transmissions will be manually initiated by the licensee after declaration of an emergency at the site. Upon receipt at the Operations Center, the data will be automatically converted to a standard format for display, logging and potential retransmission.

Provisions will be made for display of the converted data stream in the Incident Response Center of the appropriate NRC regional office, on appropriate equipment available to the NRC site team, and other

locations. This concept has been tested twice in exercises with Duke Power Company's McGuire facility and with Commonwealth Edison's LaSalle facility. Both tests demonstrated major improvements in assessments and communications due to the regular, accurate, time-tagged updating of a limited set of parameters.

C.1.1.3.2 - Phase 2. In the second phase, a contractor (the ERDS Requirements Analyst) surveyed the existing parameter availability and electronic data systems at most of the operating or nearly completed nuclear power plants in order to determine the appropriate means to acquire data from each facility and the variety of formats and conventions which must be accommodated by the receiving system at NRC headquarters. The contractor determined the hardware requirements at the sites, at the Operations Center, and at the Regional Incident Response Centers. The contractor determined software functional requirements for each site and for the reformatting, display, and retransmission operations at NRC headquarters. The detailed report of the requirements is provided as Attachment 1.

C.1.1.3.3 - Phase 3. In the third phase, a contractor (the ERDS Implementation Contractor) will implement the Emergency Response Data System. Based on the system design produced in phase 2 the ERDS Implementation Contractor will procure, install, and test the necessary hardware; and develop, install, and test the necessary software to produce a functional ERDS. The contractor will furnish a fully operational system.

C.1.1.4 Role of the NRC

The NRC will provide overall program direction and review and approve all plans and deliverable documents. Plans and documents will be approved or disapproved by the NRC Project Officer.

The NRC is responsible for arranging and scheduling the participation of licensees with ERDS implementation. The NRC will monitor the contractor-licensee interaction to help prevent any difficulties and to help resolve any problems which might arise. The NRC will arrange access to any existing NRC equipment which may interface with the ERDS.

C.1.1.5 Role of the Contractor

The contractor shall assume complete technical and administrative responsibility for completion of work described in a plan that has been approved by the NRC.

The contractor shall notify the contracting officer as soon as possible of any circumstances that may cause a "significant variation" in the effort or schedule from that described in the approved plan. Failure to meet a scheduled milestone or ten percent or more overrun at the end of any month above the budget planned for that month are examples of "significant variation."

C.1.2 Objective

The objective of this effort is to implement the Emergency Response Data System.

C.1.3 Scope

All efforts being sought by this solicitation constitute the third (implementation) phase of the ERDS program described in Section C.1.1.3.3. Offerors are required to propose an approach, costs, and a schedule for completion of all efforts described in Section C.1.4. The successful offeror will become the ERDS Implementation Contractor, and the contract will be awarded for all work described in the Work Statement.

C.1.4 Work Statement

C.1.4.1 Familiarization

C.1.4.1.1 - The contractor shall become familiar with the NRC Incident Response Program, including the roles and responsibilities of the agency and its response personnel as described in the NRC Incident Response Plan (NRC Manual Chapter 0502) and other documents available in the NRC Public Document Room. See Section C.1.6.

C.1.4.1.2 - The contractor shall become familiar with the functions, activities, and operational organization of the NRC's Reactor Safety Team and Protective Measures Team, which directly utilize the data received from the site of the nuclear power plant during an event. The contractor is responsible for understanding the uses for which the data is to be acquired and the problems which are to be corrected by implementation of ERDS.

C.1.4.1.3 - The contractor shall become familiar with the design concept of ERDS and the reasons that this approach was selected.

C.1.4.1.4 - The contractor shall become familiar with the results of the ERDS Requirements Analysis. This includes the information on the licensees' equipment contained in the survey report and the hardware and software design specifications in the design report. In addition there may be additional design requirements, to be incorporated prior to implementation, which may have been added subsequent to completion of the Requirements Analysis.

C.1.4.2 Implementation of the ERDS Transmission, Reception, and Storage System

C.1.4.2.1 - The contractor shall prepare a detailed plan, schedule, and budget for establishing an ERDS connection with each plant on

the enclosed list (Attachment 2) as described below in sections C.1.4.2.2, C.1.4.2.3, and C.1.4.2.4. The plan shall address plant by plant and Headquarters implementation as separate and concurrent tasks. The plan shall be submitted to and reviewed by the NRC prior to initiation of work by the contractor.

C.1.4.2.2 - The contractor shall determine the appropriate hardware to satisfy the design specifications in the ERDS Requirements Analysis Report (Attachment 1). Following approval by the NRC, the contractor shall procure, on behalf of the NRC, install and test the hardware specified.

C.1.4.2.3 - The contractor shall develop, install, test, and ensure operability of the software necessary for reception, storage, use and retransmission of the ERDS transmission from each plant as follows:

- * In conjunction with the NRC, arrangements will be negotiated with each plant to provide an ERDS output transmission from the site to the NRC.
- * As each licensee transmission design is finalized the contractor will develop, install, test, and ensure operability of the software necessary for receipt and modification, if necessary, of the data stream on the Operations Center ERDS hardware in compliance with the design specifications in the ERDS Requirements Analysis Report.

- * The contractor shall develop, install, test, and ensure operability of the software for storage of the data in compliance with the design specifications in the ERDS Requirements Analysis Report.
- * The implementation shall be done in a manner that assures that the completed portions of the ERDS system are maintained in an operable condition, within design tolerances, over the duration of the project. The incorporation of each new plant transmission shall not affect the operability of the ERDS with the plants whose connections have been made. The contractor is responsible for all maintenance of the system from initiation to expiration of the contract.

C.1.4.2.4 - All software will be documented in accordance with the criteria in NRC Manual Chapter C904 (Attachment 3).

C.1.4.3 Implementation of the ERDS Display System

C.1.4.3.1 - The contractor shall prepare a detailed plan, schedule, and monthly budget for the implementation of the ERDS display system as described in sections C.1.4.3.2 and C.1.4.3.3. The plan shall be submitted to and reviewed by the NRC prior to initiation of work by the contractor. The NRC will complete its review within three weeks of receipt from the contractor.

C.1.4.3.2 - The contractor shall develop, install, test, and ensure operability of the software for the ERDS displays at the Operations Center in accordance with the design specifications in the ERDS Requirements Analysis Report.

C.1.4.3.3 - All software will be documented in accordance with the criteria in NRC Manual Chapter 0904 (Attachment 3).

C.1.4.4 Implementation of the ERDS Re-transmission System

C.1.4.4.1 - The contractor shall prepare a detailed plan, schedule, and monthly budget for the implementation of the ERDS re-transmission system as described in section C.1.4.4.2 and C.1.4.4.3. The plan shall be submitted to and reviewed by the NRC prior to initiation of work by the contractor. The NRC will complete its review within three weeks of receipt from the contractor.

C.1.4.4.2 - The contractor shall develop, install, test, and ensure operability of the software at the Operations Center for the re-transmission of the ERDS data to the Regional Incident Response Center, the Regional Site Team, and other locations in accordance with the design specifications in the ERDS Requirements Analysis Report.

C.1.4.4.3 - All software will be documented in accordance with the criteria in NRC Manual Chapter 0904 (Attachment 3).

C.1.4.5 Produce a Users Manual and Provide Training

C.1.4.5.1 - Following completion of the efforts described in Section C.1.4.3, the contractor will produce a Users Manual for that portion of the system and provide training sessions for the intended users. For proposal purposes assume two training sessions at NRC Headquarters.

C.1.4.5.2 - Following completion of the efforts described in section C.1.4.4, the contractor will produce a Users Manual for that portion of the system and provide training sessions for the intended users. For proposal purposes assume two training sessions at NRC Headquarters and one at each of five regional offices.

C.1.5 References

- a. USNRC Manual Chapter 0502, NRC Incident Response Program
- b. Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants, USNRC Report NUREG-0654, Revision 1, November 1980
- c. Functional criteria for Emergency Response Facilities, USNRC Report NUREG-0696, February 1981

References are available in the NRC Public Document Room at 1717 H Street, N.W., Washington D.C.

Section F - Deliveries and Performance

F.1.1 Monthly Letter Report

A monthly letter status report shall be submitted by the 15th of each month to the NRC Project Officer with copies to the following:

- a. Program Assistant, Division of Operational Assessment, AEOD.
- b. Chief, Incident Response Branch, AEOD.
- c. Administrative Contracting Officer, Division of Contracts, ADM.

The monthly report will summarize the following as a minimum:

- a. Relate actual efforts to those planned;
- b. Describe anticipated delays or other problems;
- c. Show actual expenditures (for labor, travel, and other costs separately) for the month of the report and cumulative to the date of the report for each major element identified in the approved plan;
- d. Show approximate projected expenditures for the following month.

- F.1.2 The effort described in Section C.1.4.2.1 shall be completed within three months after contract award.
- F.1.3 The effort described in Section C.1.4.2.2 shall be completed on a schedule agreed upon between the NRC and the contractor based on the delivery schedule agreed upon with the equipment supplier.
- F.1.4 The effort described in Sections C.1.4.2.3 and C.1.4.2.4 shall be completed on a schedule agreed upon between the NRC and the contractor based on arrangements negotiated with the licensees.
- F.1.5 The effort described in Sections C.1.4.3.2 and C.1.4.3.3 shall be completed within six months after receipt of the hardware obtained under Section C.1.4.2.2.
- F.1.6 The effort described in Sections C.1.4.4.2 and C.1.4.4.3 shall be completed within one year after receipt of the hardware obtained under Section C.1.4.2.2.
- F.1.7 The effort described in Section C.1.4.5.1 will be completed within three months after C.1.4.3 is completed. The effort described in Section C.1.4.5.2 will be completed within three months after C.1.4.4 is completed.

F.1.8 Once every two months briefings will be conducted for the NRC on project status. The location may vary between NRC and contractor offices. However, for cost proposal purposes, assume six trips per year to Bethesda, Maryland for two persons and one day each.

F.1.9 Occasional brief papers, oral briefings, and consultations may be required by the NRC. Whenever possible, the NRC will give at least one week notice of such requests. For cost proposal purposes, assume two trips per year to Bethesda, Maryland, for two persons and one day each.

F.2 Duration of Contract Period

This contract shall become effective on either the date of award or the effective date as otherwise specified, and shall continue for a five year period of performance. However, possible action by Congress may require completion of the effort within three years and at the same time ensure licensee cooperation with that time frame. Therefore, the Contract may be accelerated and completed after a shorter period of performance. Any such alteration shall be made under the Changes clause of this contract (FAR 52.243.2) which provides for negotiation of an equitable adjustment to the contractor as necessary.

Attachment 2

Arkansas 1
Arkansas 2
Beaver Valley 1
Beaver Valley 2
Braidwood 1
Braidwood 2
Browns Ferry 1
Browns Ferry 2
Browns Ferry 3
Brunswick 1
Brunswick 2
Byron 1
Byron 2
Callaway 1
Calvert Cliffs 1
Calvert Cliffs 2
Catawba 1
Catawba 2
Clinton 1
Comanche Peak 1
Cook 1
Cook 2
Cooper Station
Crystal River 3
Davis-Besse 1
Diablo Canyon 1
Diablo Canyon 2
Dresden 2
Dresden 3
Duane Arnold
Fermi 2
Farley 1
Farley 2
Fitzpatrick
Fort Calhoun 1
Ginna
Grand Gulf 1

Nine Mile Point 1
Nine Mile Point 2
North Anna 1
North Anna 2
Oconee 1
Oconee 2
Oconee 3
Oyster Creek 1
Palisades
Palo Verde 1
Palo Verde 2
Palo Verde 3
Peach Bottom 2
Peach Bottom 3
Perry 1
Pilgrim 1
Point Beach 1
Point Beach 2
Prairie Island 1
Prairie Island 2
Quad Cities 1
Quad Cities 2
Rancho Seco 1
River Bend 1
Robinson 2
Salem 1
Salem 2
San Onofre 1
San Onofre 2
San Onofre 3
Seabrook 1
Sequoyah 1
Sequoyah 2
Shoreham 1
South Texas 1
St. Lucie 1
St. Lucie 2

Haddam Neck
Harris 1
Hatch 1
Hatch 2
Hope Creek 1
Indian Point 2
Indian Point 3
Kewaunee
LaSalle 1
LaSalle 2
Limerick 1
Maine Yankee
McGuire 1
McGuire 2
Millstone 1
Millstone 2
Millstone 3
Monticello

Summer 1
Surry 1
Surry 2
Susquehanna 1
Susquehanna 2
Three Mile Island 1
Trojan
Turkey Point 3
Turkey Point 4
Vermont Yankee 1
Vogtle 1
Washington Nuclear 2
Waterford 3
Watts Bar 1
Wolf Creek 1
Yankee-Rowe 1
Zion 1
Zion 2